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## General Notes.

### GEOGRAPHY AND TRAVELS.

At the meeting of the Society of American Naturalists, held in Philadelphia, Dec. 30, 1891, reports from four exploring expeditions were read. The following abstracts of them appeared in the Philadelphia *Ledger* soon after :

#### The Galapagos Islands.

Prof. George Baur, of Clark University, Worcester, Mass., presented his report on his expedition to the Galapagos Islands, in the South Pacific Ocean.

The expedition left New York May 1, on the steamship *City of Para*, most of the funds for which having been provided by Mr. Stephen Salisbury, one of the trustees of Clark University, a contribution from the Elizabeth Thompson Fund of Boston, Prof. H. F. Osborn and others.

The expedition reached Chatham Island, one of the group, on June 9th. Here they remained over two weeks, during which extensive collections were made. Great differences were noted in the climate between the upper and lower portion of the island. In the former it was nearly always damp, rain falling nearly every night and day ; while, in the latter, it was very agreeable, and rain seldom fell.

On the 27th of June the expedition left Chatham Island, and reached Charles Island the next day.

Before going on the expedition, Prof. G. Baur had announced the conclusion that the Galapagos Islands were, contrary to the general opinion, to be considered as continental ; that they developed through subsidence, and not through elevation by volcanic activity. This conclusion led him to the establishment of the two following theses :

First. Continental islands must have a harmonic distribution of fauna and flora.

Second. Oceanic islands must have a disharmonic distribution.

From all that is known about the Galapagos Islands, it appears that the distribution was harmonic.

Charles Island was the first taken for comparison, and here everything seemed quite different from Chatham. The hills were more rounded, and there was very little indication of more recent volcanic eruption. The rocks were more decomposed, but more dry than Chatham. The composition and aspect of the flora were different. Many of the large trees of the upper region of Chatham were totally absent.

The composition of the fauna was also different. As in Chatham, the members of the expedition made large collections on Charles Island, and, as on that island, the birds were very tame, especially the small birds.

"Very often," said the Professor in his report, "the small birds alighted on my hat or gun when I kept quiet."

As an illustration of how tame the birds were, Prof. Baur related the following:

"I was watching a lizard, when a species of *Buteo*, alighted on a little bush about three feet from me. I had with me a small switch, and began to tickle him over the head, neck and body. This he seemed to like very much, not showing any fear whatever. After this I went to a small island a few yards away from the spot. I had hardly arrived there when the bird came over, alighted near me and allowed itself to be tickled again."

The birds are restricted to the single islands, and on each of them are but few species of a genus, and the land-birds at least never seem to travel from one island to another.

"Tortoises were extinct on Charles Island long ago. They are also extinct on Chatham, Barrington, Hood, and Jeans, on which islands they formerly existed. No tortoises were ever found on Tower and Brindloe.

"On South Albemarle, where we remained nearly three weeks, we secured quite a number of specimens. Here the tortoise is still numerous.

"The large and high islands of the group show the richest flora. In the flora were found the same differentiation on the different islands as in the fauna, so far as could be observed."

The report concluded about as follows:

"There cannot be any further doubt that the distribution of the flora and fauna of the Galapagos Islands is absolutely harmonious. It is this harmony in the distribution which has led me to the theory that the islands are continental and not oceanic. How could we explain by the theory of elevation, now generally accepted, harmonious distribution? It is simply an impossibility to give any explanation on this theory. The theory of subsidence, however, makes every point clear at once. All islands were connected together at a former period. At this time the number of species must have been small. Through isolation into single islands, the peculiar specialization of the species which we found began—an originally single species was differentiated in many

different forms. Every, or nearly every, island developed its peculiar races.

"Now, after it has been shown that the Galapagos Islands are continental islands, the question arises, How about other continental groups which are generally considered to-day of oceanic origin? How about the Sandwich Islands and the others in the Pacific Ocean? And how about the theory of the constancy of the ocean basins? Is this theory on a sound basis? I do not think so; and I am glad to say that this theory has been doubted recently by eminent geologists.

"But geology seems to be unable to give a definite answer. Here biology came to help by a detailed study of the organisms of the different groups of islands and their geographical distribution. I think it will nearly always be possible to determine whether the groups have originated through subsidence or through elevation. In the first case we will find harmony; in the second case, disharmony.

### **North Greenland Expedition.**

Prof. Heilprin followed with a report of the expedition sent out last June by the Academy of Natural Sciences to Greenland. He reviewed the journey from Disco to McCormack Bay, where Lieutenant Peary and his party were left. He described the town of Godhavn, and gave a vivid word-picture of the bleak coast of Greenland. He told minutely the story of the struggle with the ice-pack in Melville Bay, and described the appearance of the great ice sheets and of the huge icebergs met with. He also gave a sketch of the place where Lieutenant Peary built his headquarters, and what he expected to accomplish. Prof. Heilprin also reported briefly on the valuable collections made, and of the otherwise successful results of the expedition.

### **Labrador's Fauna and Flora.**

Prof. L. A. Lee, of Bowdoin College, Brunswick, Me., made a report on the scientific expedition to Labrador last summer, under the title of "Scientific Results of the Bowdoin College Expedition to Labrador." The party consisted of nineteen persons, mostly graduates of the College, and left Rockland Me., on the 27th of last June, returning September 24. Most of the time was spent on the coast of Labrador, between the Straits of Belle Isle and Hopedale, Latitude  $55^{\circ} 27'$  North. Much dredging was done along the coast, which brought to light abundant species of molluscs and crustacea, many of them new to the known fauna of the country.

In the mouth of Hamilton Inlet a true deep-sea deposit was found in fifty fathoms of water, where the bottom consisted largely of the

shells of arenaceous Foramenifera, like *Hyperammina*. The number of known species of fish was doubled, and specimens were secured of a remarkable deep-sea *Plagyodus*. In archæology a very interesting discovery was made of the remains of an ancient Esquimaux village, among the refuse of which were found many bone implements, ornaments and carvings of ivory.

The work of a sub-expedition, which rediscovered the grand falls, whose height was shown to be 316 feet, was briefly referred to. In closing, Prof. Lee said that, while a great many additions to the fauna have been made by the large collections secured, there is still great opportunity for further investigation and exploration, and the members of the expedition consider the country a very important field.

### Studies of the Gulf Stream.

The last report presented to the meeting was by Prof. William Libbey, Jr., of Princeton University, and it proved one of the most interesting and valuable of the series. It referred to the study, with the United States Fish Commission, of the currents in the Gulf Stream on portions of the Atlantic coast. The Professor said the work was conducted on a series of lines parallel to the coast of New Jersey, between Block Island and Nantucket. Along these lines, which were 150 miles in length, were made a series of stations, at which stations observations were made in temperature and densities; also in currents; and, at the same time, meteorological observations. All of these observations, he said, showed the peculiar relations of the Gulf Stream to the Labrador current. The position of the different curves of temperature were drawn after these observations were plotted. These curves of fifty degrees showed marks of the boundary of the intrusion of the Labrador current into the northern edge of the warmer waters.

Then the fact was shown, continued Professor Libbey, that we were dealing with two different sets of currents—one a deep series, and the other a surface set; both being modified by the mechanical laws of their motion, by changes in velocity, temperature and density. But the surface currents were further modified by the direction, duration and velocity of the wind currents.

The appearance of smaller, band-like currents upon the north-bound Gulf Stream, which were reversed in the direction of their motion after they had passed somewhat to the northward, was explained and offered as a reason for the appearance of schools of fishes at different points of the coast, since the warmer waters provide the proper conditions

for the growth and distribution of the fishes' food, by the bridging over of the cold current.

The effect of the wind on the modification of the northern boundary of the Gulf Stream was pointed out, and it was shown that it had been moving towards the New Jersey coast at the rate of sixty miles per year. The pilot charts of the North Atlantic coast, in which were given the direction and velocities for the last three years, were exhibited to support this view. Further, the influence of these changes in the conditions in temperature and moisture upon our climate were pointed out and some explanations offered.

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## GEOLOGY AND PALEONTOLOGY.

**The Earthquake in Japan.**—In a recent letter to the *New York Tribune*, Mr. Kairiyama, a Japanese resident of New York, states he has received letters from Japan containing many particulars of the terrible earthquake in that country, which took place October 28. The section chiefly afflicted was the great island of Hondo, which is the main island of the Japanese empire, embracing many provinces. The surface of the ground at the time of the disturbance was terribly shaken. No person could stand. Houses were instantly thrown down; fire instantly raged, roasting the imprisoned victims. The shocks took place at intervals during four days, and varied from 100 to 600 in different localities. Relief funds are being subscribed in this and other countries.

The London *Daily Graphic* says: "Twenty-six thousand five hundred people were killed and wounded; 90,000 houses destroyed; 200,000 people homeless. Not even the distance between them and us, which robs the facts of so much of their import, the figures of so much of their meaning, can deprive them of all. There are people starving, too; and this is a tangible ill, which we may attempt to lessen as well as to appreciate. An appeal has been made by the Japanese people to our charity. The disaster which has overtaken them is not within human power to foresee or to prevent; but some of the consequences it is only human to attempt to alleviate."

The steamer *China*, which recently arrived at San Francisco from Hong Kong and Yokohama, reports that, while the steamer was between Hong Kong and Yokohama on the return trip to San Francisco, an imposing sight was witnessed by the passengers and crew.

The great earthquake at Yokohama had taken place a short time previous, and many of the islands in the Yellow Sea were in a state